



National Park Service
U.S. Department of the Interior
Yellowstone National Park
Wyoming, Montana, Idaho

Finding of No Significant Impact

Electric Transmission/Distribution System Communication and Automation Plan

Background

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with the proposal to implement infrastructure upgrades to the NorthWestern Energy (NWE) electrical power distribution system in Yellowstone National Park (YNP). These upgrades would improve the reliability, safety, and overall quality of service.

The plan was developed in order to help provide a more reliable and safer electrical distribution system that meets park operational needs and does not unduly impact the visitor experience within the park. Electric power outages occur frequently in the park. Much of the existing NWE infrastructure was installed in the 1950s and is not automated and prone to frequent outages. The majority of outages that occur on the transmission lines are caused by falling trees and other nature-related causes. The remote geographical location and lack of a reliable communications system connecting the infrastructure components within the park has meant that a Supervisory Control and Data Acquisition (SCADA) system has never been constructed. SCADA systems are common across the region and country to allow for remote switching of power supply equipment, quicker diagnosis of transmission line breaks and their location, and safer working conditions for electric company personnel. The lack of such a system has caused outages to be longer than if there was a SCADA system.

Communication is important between NWE personnel to allow for clearance procedures, system status, and safety of employees. NWE has used a land mobile radio system within the park until January 1, 2013, when a Federal Communication Commission (FCC) *VHF/UNHF Narrowing Bandwidth Mandate* went into effect. As of that date, all public safety and business industrial land mobile radio systems had to operating using at least 12.5 kHz efficiency technology. The FCC mandate was enacted to ensure more efficient use of the spectrum and greater spectrum access for safety. NWE does not currently have a narrowband radio system within the park and cell phone coverage is limited. Since the FCC mandate went into effect, NWE has been using a few satellite phones for communication though coverage has not been reliable.

Selected Action

Alternative B, Upgrade Existing Substations and Install VHF RF Automation and Communication System, is the preferred alternative and NPS's selected action because it best meets the purpose and need for the project as well as the project objectives to 1) Increase the reliability and overall service quality of electrical power distribution throughout the park, 2) Reduce impacts to the visitor experience and park operations from disruption of power outages, 3) Improve safety conditions for park visitors, park employees, cooperators, and contractors.

Under Alternative B, new pre-fabricated buildings will be placed at power substations located at Mammoth, Norris, Canyon, Lake, Old Faithful, and Madison, to provide needed space for all existing relays to be moved or replaced into the dedicated panels. Mobile radio equipment will also be housed inside the buildings. Building sizes will vary by location (generally 16'x24' and as stated in Table 3 of the EA to accommodate the relay and communication equipment needed for automation. They will have a metal roof, be built on a 6" concrete slab and meet NPS specification for color and finish. At the Buffalo Mountain repeater site located on Gallatin National Forest Land a 12' by 20' building is proposed.

A Supervisory Control and Data Acquisition System (SCADA) will be installed at each of the seven substations and at Buffalo Mountain on Gallatin National Forest land. These upgrades will allow monitoring and control by a central office located in Butte, Montana to remotely switch power and fault locations. It will also allow for automatic reading of meters measuring power use.

Advanced metering systems will be installed to allow for automatic meter reading for electric energy use in the park for energy supplied by NWE. The detailed (short-time interval) information collected could be used to pinpoint problems regarding energy consumption, and help the park move forward in improving its energy efficiency. Infrastructure will include replacing existing meters on buildings with meters that have small antennas and radios that will communicate with the installed towers.

A new communication system tower will be installed at each of the seven substations and is proposed at the Buffalo Mountain location on U.S. Forest Service (USFS) lands. The USFS will be completing their compliance process for the Buffalo Mountain tower location this spring. Six of the NPS location towers will be 60 feet tall, 24 inches wide, three-legged, of a metal lattice design, and have a dull matte finish. The Mammoth substation tower will be 30 feet tall. All towers will be equipped with a VHF antenna that will be similar to a TV antenna and have 24-30 inch elements. No tower lighting is proposed. A concrete foundation will be placed at each location to support the tower. A new antenna will be mounted on the existing 100' lattice tower at Elk Plaza in Mammoth.

Each new equipment building will be equipped with a propane back-up generator. The generators will only provide power for communication and relay equipment so that NWE will be able to remotely control switches and have system status indication.

New 500 gallon capacity (1,000 gallon at Buffalo Mountain) propane tanks will be installed at each location, except Grant Village and Old Faithful where existing tanks will be used. Most tanks will be located within the fenced area of the substation and screened by the equipment building from view by the public. Each propane tank will provide fuel for a backup generator that will supply power for communication and relay equipment.

Yellowstone National Park staff will re-evaluate the technology every 5 years to determine whether any technology changes have occurred that would allow automation and communication for NWE substations without the use of towers. When such reliable technology exists that can be deployed in Yellowstone, it may be implemented, provided there are no new impacts, and the towers added as part of this project may be removed.

All coordination of construction will occur from existing NWE buildings at Lake, Grant Village, and Old Faithful.

Staging areas will be used for construction, material stockpiling, and equipment storage. Staging will occur only within already disturbed areas immediately adjacent to the substations, or at approved maintenance or service areas within the park approved by the NPS.

Mitigation Measures

General Construction

- Because disturbed soils are susceptible to erosion until re-vegetation takes place, standard erosion control measures such as silt fences and/or sand bags will be used to minimize any potential soil erosion.
- The NPS project manager will be responsible for ensuring that the project remains within the construction limits.
- Fugitive dust generated by construction will be controlled by spraying water on the construction site, if necessary.
- To reduce noise and emissions, construction equipment will not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from construction equipment, the contractor will regularly monitor and check construction equipment to identify and repair any leaks.

Soils

- To minimize the amount of ground disturbance, staging and stockpiling areas will be in previously disturbed sites, away from visitor use areas to the extent possible. All staging and stockpiling areas will be returned to pre-construction conditions following construction.
- Construction zones will be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

Vegetation

- Re-vegetation and re-contouring of disturbed areas will take place following construction and will be designed to minimize the visual intrusion of the structure. Re-vegetation efforts will strive to reconstruct the natural spacing, abundance, and diversity using native species. All disturbed areas will be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed. Weed control methods will be implemented to minimize the introduction of noxious weeds. Some trees may be removed, but other existing vegetation at the site will not be disturbed to the extent possible.

Wildlife, Birds, & Federally Threatened, Endangered and Special Status Species

- Construction workers and supervisors will be informed about special status species. Contract provisions will require the cessation of construction activities if a species were discovered in the project area, until park staff re-evaluates the project. This will allow modification of the contract for any protection measures determined necessary to protect the discovery.
- Any proposed towers will be free-standing and not use guy wires for support. No lighting will be present on any proposed tower.

Archeological Resources

- Should construction unearth previously undiscovered cultural resources, work will be stopped in the area of any discovery and the park will consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) will be followed.
- The NPS will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors will also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.

Geothermal Resources

- The park geologist will be consulted if any of the following conditions are encountered: 1. A pre-existing hole in the ground the size of a basketball, or larger, 2. Standing or flowing water, either hot or cold, 3. Any concentrations of either carbon dioxide or hydrogen sulfide are measured, 4. If during excavation a red clay layer is encountered, or 5. Temperatures above 80 degrees Fahrenheit are measured (early morning).

Visual Resources

- Per the 2009 Yellowstone Wireless Communications Services EA in order to minimize visual impacts, the surfaces of the tower will be treated such that they will minimize reflection. Galvanized metal lattice towers will be treated with an acid wash that will quickly weather the material and reduce its shiny qualities. Towers will be located to take advantage of screening offered by existing trees, and in locations to best minimize visual impacts.

Visitor Use & Experience

- Construction will be done to minimize impacts to visitors. To avoid noise during quiet hours, no night work will occur.

Alternatives Considered

This NPS examined four alternatives: a no action alternative and three action alternatives. Alternative A, the no action alternative- the current condition with no NWE upgrades constructed. Alternative B, the NPS preferred alternative, and selected action as described in the previous section, to upgrade existing substations and install VHF RF automation and a communication system. Alternative C, upgrade existing substations and install fiber optic cable for SCADA automation; towers constructed for a land/mobile radio system. Alternative D, upgrade substations and use a satellite system for indication only; SCADA automation may not be possible due to latency issues with the satellite signal. Communication would occur with satellite phones. Alternatives A, C and D are further described below:

- **Alternative A (No Action):** Under this alternative, the seven existing power substations would not be upgraded, no new buildings to house communication equipment would be installed, and associated upgrades to the current communication capacities would not occur. Power outages and outage times would not change. Diesel generators would continue to be used during outages at Old Faithful, Lake, and Grant Village. Maintenance of the existing substation systems and components would continue. The Federal Communication Commission (FCC) rule to implement the FCC VHF/UNHF Narrowing Bandwidth Mandate and operate at 12.5 KHz efficiency prevents NWE from

using their old wideband radio system. For communication purposes NWE currently uses, and would continue to use, a few satellite phones though coverage is not reliable.

- **Alternative C, Upgrade Existing Substations and Install Automation and Communication System Via Fiber and Microwave:** This alternative would install approximately 90 miles of fiber optic cable within the existing right of way for the transmission lines. Towers, as described in the preferred alternative, would be required to support antennas for a land mobile radio communication system for NWE personnel. Proposed equipment buildings, generators, propane tanks would be the same as described for Alternative B (the selected action- described in an earlier section). This alternative would enable SCADA remote control to reduce outage time and improve reliability. This alternative would use fiber optic cable buried within the existing NWE right-of-way corridor to provide SCADA for the electrical equipment. The fiber would be installed in 2 inch conduit and placed at a depth of about 24-36" underground. Installation of the cable would require trenching or plowing cable within the 40-foot wide corridor. Some tree cutting may be required to try and avoid wetlands, rare plant sites, or archeological sites along the corridor. In areas where these sites cannot be avoided it may be necessary to trench or plow through the site, or bore under the site. The distance required for installation, plus the rugged terrain would mean that construction activities would occur over multiple peak seasons. Construction is anticipated to take three to four years- with a construction season of 5-6 month a year, full time work with at least two crews. Actual schedules would be dependent upon weather (snow and frost) conditions.
- **Alternative D, Upgrade Existing Substation and Install Indication and Communication System via Satellite Phones:** This alternative consists of installing a Very Small Aperture Terminal (VSAT), such as exists at Old Faithful, at each of the seven substations within the park. The VSAT system would allow the System Operation Control Center (SOCC) in Butte, Montana, to monitor system status and receive indication of system problems much earlier than currently occurs. A VSAT is a two-way satellite ground station with a dish diameter of approximately 4-feet. This alternative would require a structure to mount the antenna (a small dish type) and to keep it above the snow. This structure though, at approximately 6-feet, would be much shorter than what is being proposed in alternative B. All proposed equipment buildings, generators, propane tanks would be the same as described for Alternative B. Automation (SCADA) of the system is not possible using a satellite-based system under this alternative, due to the latency involved in sending and receiving signals. The satellite system would provide "indication only" of trouble within the system. The NWE electric system works on 60 cycles per second. The latency of the satellite signals is about 3 cycles. This signal can also be affected by weather and terrain and is considered too slow for safe operation of a SCADA system. NWE linemen would still be required to physically visit the site and manually throw the switches and breakers. This system would be the least expensive to construct and would introduce the fewest new elements onto the landscape. This alternative though would not provide for automation of the system, and would not allow for a land mobile radio system or AMR, would be susceptible to snow outages, and would not provide safety benefits or reliability improvements to the existing system. Construction of this alternative is expected to take one construction season (April-October).

Environmentally Preferable Alternative

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative "that causes the least damage to the biological and

physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

Alternative B is the environmentally preferable alternative for several reasons: 1) It will increase the reliability of the electric transmission and distribution in the park by reducing outage frequency and duration by using a SCADA system that allows remote switching from a central office; 2) Safety of visitors and employees will be enhanced by reducing outage frequency and duration allowing medical facilities less disruption, medical equipment recharging by visitors, and less disruption to operations within the park; 3) NorthWestern Energy line worker safety will be increased by removing the need to manually operate large switches and breakers within the substations, reducing frequency and duration of outages to visitors, staff, and residents of the park; 4) Improvement will be made by providing a working environment for the power company workers that improves health and safety related working conditions; 5) New facilities will be placed at existing substations, of which most are currently not visible to the public.

Alternative B would provide the widest range of improvements to the reliability of electric service and health and safety in the park. It also best protects, preserves, and enhances historical, cultural, and natural resources, thereby making it the environmentally preferable alternative to the other three alternatives and for the reasons further summarized in the following paragraphs.

Alternative A (No Action) would not provide any improvement in the reliability or safety of the current NWE electrical transmission and distribution system within the park. The current method of switching power during outages involves manually throwing large switches mounted high above ground level using "extendable poles". The lack of a reliable communication system for NWE employees further increases the safety risk of working on the lines and transferring power. The current functioning of the existing substations does not improve health and safety standards in terms of the power company being able to work on and maintain the line which is contrary to assuring safe surroundings. Although it minimizes potential impacts to park resources because there would be no construction, it does not achieve a balance between these resources for the long-term because the eventual lack of power would likely result in closing of park facilities and services to the public. This alternative also does not meet the criteria for improving the reliability of electric service because the existing substations and communication system employed by NWE personnel do not reduce outage times, and continue to use an unreliable satellite phone system.

Alternative C has a higher degree of impact because it would require 3-4 years of construction occurring in park's backcountry, and would impact wildlife, geothermal areas, wetlands, archeological sites, and rare plants within the corridor. While this alternative does meet the objectives of the project, it does so with additional impacts, takes more time, and increases cost.

Alternative D is not the environmentally preferable alternative because, although there would be no construction or ground disturbing activities that would damage previously undisturbed elements of the biological and physical environment. The reliability of the existing electric transmission system is not improved; the alternative would not allow for remote control of substation equipment, workers would still assume risk by throwing switches manually. Communications with other line workers and central office remain unreliable.

Why the Selected Action Will Not Have a Significant Effect on the Human Environment

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

Implementation of the preferred (selected) alternative will result in some adverse impacts; however, the overall benefit of the project, particularly to visitor use experience and park operations, outweighs these negative effects. The adverse effects are summarized as follows.

Minor impacts to soils will occur to a total of approximately 0.1 acre. Soil disturbance in the immediate vicinity of the existing substations and within the existing disturbed areas will occur from activities associated with excavation, trenching, construction, and grading to establish a level surface for the base of the towers. No geothermal areas are known to exist in the immediate vicinity of the proposed work activities and impacts to geothermal resources will be negligible. Impacts to vegetation will occur due to excavation, trenching, grading, and construction to upgrade the existing substations and establishing a level surface for the base of the towers. Vegetation impacts will be negligible to minor. Wetlands or wet areas will be avoided. Areas with rare plant concerns will be flagged and avoided. Wildlife and special status species that use this area could be temporarily displaced by construction activity and equipment, but will be expected to return following completion of the project and will have negligible to minor impacts on wildlife and wildlife habitat. Impacts to federally listed and candidate species such as the Canada lynx, grizzly bear and whitebark pine will be negligible. Impacts to visual resources will be negligible to minor. Based on photo simulations prepared to determine impacts to visual resources, some proposed infrastructure will be visible for brief periods or from a few locations within historic districts. Impacts on cultural resources from this visibility are considered minor. Impacts on health and safety of visitors, employees, and NWE staff will be beneficial and minor due to improved safety of remote switching for linemen, improved reliability of electric power and fewer and shorter duration outages. Impacts to visitor use and experience will be minor due to visual impacts from the proposed towers and construction noise from heavy equipment and vehicles associated with the construction of the project. Moderate beneficial impacts will result from reducing the number of power outages and increasing the safety and reliability of the power system. Impacts to park operations will be moderate and beneficial from the reduction of power outages within the park.

The degree to which the proposed action affects public health or safety

The preferred alternative will reduce extended outages and have an overall beneficial effect on public health and safety. Extended outages in Yellowstone have caused concerns for the NPS and the concessionaires that provide services to park visitors. Public safety concerns have been from delaying services such as fueling vehicles, making purchases, charging or operating medical equipment, lack of lighting, and lack of communications.

Under the preferred alternative, NWE personnel health and safety will be improved by the installation of a reliable communication system.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas

The preferred alternative will not impact unique characteristics of the area including park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas because these resources do not exist in the project area.

The sites for the communication towers will be either barely visible or slightly visible in the distant from the Mammoth Hot Springs Historic District, Fort Yellowstone National Historic Landmark District, and Grand Loop Road Historic District.

The degree to which the effects on the quality of the human environment are likely to be highly controversial

The environmental assessment analysis revealed no effects on the quality of the human environment that are thought to be highly controversial. External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to implement a communication and automation plan. A scoping letter dated May 13, 2013 was mailed to 165 groups, individuals, and agencies. Native American tribes, local governments, and local news organizations were also notified. During the 30-day scoping period a total of 11 individuals and businesses submitted comments. During the initial public comment period from November 6, 2013 through December 6, 2013 four comment letters were received. Prior to the close of the comment period, the National Parks Conservation Association (NPCA) requested a 30-day extension of the comment period. A 15-day extension was granted. NPCA released an "Action Alert" to their members along with a sample form letter. This form letter was picked up and modified by at least one other group. The "Action Alert" and two form letters resulted in an additional 3,428 comment letters being submitted through the PEPC system. Responses to substantive comments are addressed in the "Response to Public Comment" that is attached to this FONSI. The project generated very little press coverage during either the scoping or comment review periods.

The degree to which the possible effects on the quality on the human environment are highly uncertain or involve unique or unknown risks

The effects of constructing the proposed upgrades for the electric substation and repeater site are fairly straightforward and do not pose uncertainties. The selected action involves improving conditions in a way that enhances visitor experience while providing a safe, healthy and functional working environment for park operations. The environmental process has not identified any effects that may involve highly unique or unknown risks.

The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration

The preferred alternative is not expected to set a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Cumulative effects were analyzed in the EA and no significant cumulative impacts were identified.

The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The proposed upgrades to the electric substations include the installation of metal lattice towers and prefabricated equipment buildings. The substations at Old Faithful and Mammoth are the only substations near historic districts. The location of existing substations and their proximity to existing vegetation and varying terrain keep proposed infrastructure from being seen at most

locations. No archeological resources will be affected. Based on photo simulations prepared for this project, a minor, long-term, indirect adverse impact is anticipated on historic structures and cultural landscapes, resulting in a "no adverse effect" under § 106 of the National Historic Preservation Act. In a letter dated January 22, 2014 from the Montana State Historic Preservation Office (MTSHPO), the MTSHPO concurred with the park's determination that the proposed undertaking will have no effect on historic properties within Montana. A separate letter dated February 21, 2014 from the Wyoming State Historic Preservation Office (WYSHPO) concurred with the park's finding that the following historic properties will not be affected by the undertaking as planned: 48YE675, 48YE682, 48YE686, 48YE822, 48YE823, 48YE852. The WYSHPO further concurred that historic properties 48YE486, 48YE50, and 48YE1057 will not be adversely affected by the undertaking as planned.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The NPS requested informal consultation under §7 of the Endangered Species Act for the proposed project from the U.S. Fish and Wildlife Service in a letter dated November 20, 2013. In a letter dated December 13, 2013 from the U.S. Fish and Wildlife Service, the Service concurred with the park's determination that the proposed project (Alternative B) "may affect, but not likely adversely affect" grizzly bear and Canada lynx. The project will have "no effect" on Canada lynx critical habitat.

Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment

The action will not violate any federal, state, or local laws or environmental protection laws.

Public Involvement and Native American Consultation

The EA was made available for an initial 30-day public review and comment period. A total of four comment letters were received during this initial period. During this time period an environmental advocacy group requested a 30-day extension. A 15-day extension was granted. During this period 3,428 comment letters were received prompted by an "Action Alert" sent by the advocacy group. The entire 45-day comment period ended December 21, 2013 and produced a total of 3,432 comment letters of which exact copies of two form letters identified. To notify the public of this review period, a postcard was mailed to stakeholders, interested parties, and a press release was posted on the park's website. Copies of the document were sent to individuals, groups, agencies, from the park's general mailing list, and to interested parties who requested a copy during the scoping period. The Environmental Assessment was posted on the NPS PEPC website at <http://parkplanning.nps.gov/NWEPlan>. A total of 3,432 individuals submitted correspondence that included 1,924 identified comments. A coding structure was developed to help sort comments into logical groupings, concerns, statements, and topics. Substantive comments and NPS responses are found appended to this document in the "Response to Comments" attached to this FONSI.

A scoping letter was mailed to 73 tribal members of Yellowstone's 26 associated tribes in May 2013, to solicit concerns and comments for the proposed project. A list of all tribes included in this mailing can be found on page 101 of the EA. The same tribal members were sent another letter in November 2013 notifying them of the release of the EA for public review and soliciting comments on the project. The park did not receive any comments from Native American tribes.

Conclusion

As described above, the preferred alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that range from localized to widespread, short- to long-term, and negligible to moderate. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, NPS has determined that an EIS is not required for this project and thus will not be prepared.

Approved:

for
Sue Masica

Jana H. Joss
Regional Director, Intermountain Region, National Park Service

4/3/14
Date

Response to Comments

Electric Transmission/Distribution System Communication & Automation Plan

Yellowstone National Park

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal.

Some substantive comments may result in changes to the text of the EA, in which case, they are addressed in the *Text Changes* section of the Errata Sheets. Other substantive comments may require a more thorough explanatory response and are addressed in the *Response to Comments* section. NPS responds to all substantive comments in either or both of these sections.

Of the comments that were received during public review of the EA, they have been grouped in the topics below. Comments below are representative of the comments received for each of the topics. These concerns resulted in minor changes to the text of the EA as noted in the attached Errata Sheets and are also explained more thoroughly in this *Response to Comments* section below.

Consistency with Other Plans

Comment 1 – The 2008 Wireless Communications Services Environmental Assessment & Finding of No Significant Impact, Director's Order #53, and RM-53 suggest that the Park Service should further review this proposal and reject any application that imposes impacts on environmental, scenic, cultural, and historic resources.

A review of the 2008 Wireless Communications Services EA & FONSI, as well as Director's Order #53 and RM-53 highlights the need for an applicant wishing to install wireless telecommunications facilities in a park to go through a specific set of procedures, and for the Park Service to take a close look at any potential impacts on environmental, scenic, cultural, and historic resources.

The Park Service should not only reject any applications that impose impacts that cannot be mitigated, but that the Park Service should not approve projects that would be located within the plain view of sensitive natural or cultural areas or where construction operations would have adverse impacts on species.

Response 1 – *Northwestern Energy is proposing operation of internal radio telecommunication sites for this project through modification of their existing Utility Right-of-Way (ROW) Permit and not as a new commercial telecommunications service to the public. The sections referencing wireless telecommunications facilities in both Directors Order#53 (DO-53) and Reference Manual #53 (RM-53) (sections 10.2.2 and Appendix 5, A5 – 44, respectively), do not apply to this proposal because Northwestern Energy will not be providing telecommunication service to the public via telecommunications equipment, as defined in the Telecommunications Act of 1996 [SEC. 2, Sec. 3, (51)]. Therefore, the guidance and policy in DO-52 and RM-53 that is applicable to utility rights of way and associated ROW infrastructure, such as radio, television, and other communication transmitting and receiving structures, facilities, and antennas (including cellular sites), is described in Section 10.2.1 of DO-53 and Appendix 5, A5-1 in RM-53. These uses are authorized under 16 U.S.C. § 5 and 16 U.S.C. § 79.*

Consistent with the Utility Rights-of-Way sections in DO-52 and RM-53, NEPA and other laws, regulations and policies, the EA analyzed the impacts of the alternatives to soil resources; geothermal resources; vegetation, rare plants and wetlands; wildlife; special status species; scenic resources; cultural resources; human health and safety; visitor use and experience; and park operations. The potential impacts of the preferred alternative were identified to range from negligible to minor, short and long-term adverse impacts to moderate short and long-term beneficial impacts, depending on the impact topic. There were no significant adverse impacts identified under any alternative proposed in the EA.

The actions proposed in the preferred alternative are also consistent with the 2008 Yellowstone Wireless Communications Services Plan/EA and FONSI, which provides management guidelines for all different types of wireless communications in the park, including two-way radios, weather stations, Wi-Fi services, park radio communications, partner radio systems and wireless cellular service. All actions would follow the wireless plan siting criteria and other guidelines outlined in Appendix A of the Wireless Communications Services Plan FONSI.

Climate Change

Comment 2 – You have wrongly dismissed from further analysis Climate Change and Sustainability. No topic could be more directly on point to this proposal. Most of Northwestern Energy’s electricity is generated from dirty sources of energy, which (by scientific consensus) are the leading cause of our rapidly changing climate. How can Yellowstone not formulate and examine at least one proposal to wean itself off of these deadly fuels, when part of what their Interpreters teach (and their researchers are learning firsthand) is the devastating impact we are all having across the globe through our energy consumption?

Response 2 – *Yellowstone is actively involved in environmental stewardship, particularly in the last decade, with the implementation of initiatives such as the Greening of Yellowstone. The greening initiative includes recycling, waste reduction, energy reduction, composting much of the park’s waste, Leadership in Energy and Environmental Design building certification, and the use of hybrid vehicles and bio-fuels in summer and winter. The park continues its advances in environmental education and action, including steps to reduce human activities that contribute to climate change. In addition, the park has investigated historical snowpack trends to explore the role of winter use in climate change and conservation potential by tracking both snowmelt and temperatures throughout the winter season. Implementation of the preferred alternative would reduce the need to operate large diesel generators (for emergency power to some of the park’s developed areas) and reduce the number of trips NWE personnel drive from Bozeman, Montana (to manually operate switches to determine system status). The purpose of the project is to provide a reliable and safe electrical distribution system that meets park operational needs without unduly impacting park resources and visitor experience within the park. While the park supports the use of alternative sources of energy, the purpose of this project was not to identify and implement electrical power generation from other sources. Replacing the existing power infrastructure within the park with photovoltaic, wind, hydro, or other types of power generation is outside the scope of this EA, which proposed to upgrade the existing infrastructure operated by NWE.*

Follows Laws and Policies

Comment 3 – The Proposed Action does not meet the standards of NPS Management Policies Section 8.6.4.3 specific to telecommunication sites. This policy states that, “In recognition of the growing prevalence of wireless telecommunications, the manner in

which the park will manage the technology and related facilities should be addressed in an appropriate planning document.

“This proposal violates the NPS Management Policies of 2006, Section 8.6.4.3. Why does the EA not mention this section, which relates to Telecommunication Sites in National Parks? It reads, “New traditional towers (i.e., monopole or lattice) should be approved only after all other options have been explored.” Where is the exploration of all other options in this EA?”

Response 3 – Section 8.6.4.3 of the NPS Management Policies applies to projects that are considered in accordance with the Telecommunications Act of 1996, which has specific definitions of telecommunications carriers, equipment and services [SEC. 2, Sec. 3, (49) (50) (51)]. The 1996 Act states that Telecommunications service means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used. The actions proposed in this EA do not meet the definition of telecommunication services as defined in the Telecommunications Act of 1996, therefore Section 8.6.4.3. does not apply. However, Section 8.6.4.2 of NPS Management Policies does apply and states that, “Utility rights-of-way over lands administered by the Park Service are governed by statutory authorities in 16 USC 5 (electrical power transmission and distribution, radio and TV, and other forms of communication facilities)....” This section further states that “...rights-of-way...are discretionary and conditional upon a finding by the Service that the proposed use will not cause unacceptable impacts on park resources, values, or purposes.” There were no significant or unacceptable impacts identified under any alternative proposed in the EA.

Comment 4 – On Page 8 of the EA, you refer to various Management Policies of 2006 that relate to energy conservation, design, and sustainability. But then you do not provide any details about whether the park is even complying with these provisions.

Response 4 – The park has adhered to these policies by changing the original design concepts to reduce the tower height at the Mammoth Substation through the use of an antenna to be mounted on the existing tower at Elk Plaza in order to reduce visual impacts. Further, the park will use existing vegetation and color choices to screen and camouflage proposed new infrastructure. Regarding energy conservation and sustainability within the park, photovoltaic arrays have been used for primary power needs at the Lamar Buffalo Ranch (60% of electric power needs) and at the Bechler Administrative Area (90% of electric power needs), both inside the park. However, because Yellowstone National Park lies at the end of NorthWestern Energy’s electric transmission line there are presently no other alternatives for providing the power needs of the park and its visitors.

Comment 5 – How do Yellowstone officials have any jurisdiction over development plans at Buffalo Mountain, in Gallatin National Forest? Doesn’t that require approval from the U.S. Forest Service?

Response 5 – Yellowstone National Park and the Gallatin National Forest have collaborated on this project. The Gallatin National Forest will complete the necessary environmental compliance for the portions of this project that occur on National Forest lands. However this location at Buffalo Mountain is considered a connected action and therefore was discussed in the EA. Connected actions are those that are “closely related” to the proposal and alternatives. The NPS environmental policies require that we consider the affects and impacts of connected actions in our environmental analysis.

Affected Environment: Wildlife and Wildlife Habitat

Comment 6– The proposed action constitutes major construction activity which warrants preparation of a biological assessment and consultation with the U.S. Fish and Wildlife Service.

Response 6 – Pursuant to Section 7 of the ESA, the NPS did complete informal consultation with the U.S. Fish and Wildlife Service for this project. The consultation process was completed on December 18, 2013, with concurrence from the U.S. Fish and Wildlife Service on our determinations of “may affect, not likely to adversely affect” grizzly bears, “may affect, not likely to adversely affect” Canada lynx, and “no effect” on designated critical habitat for Canada Lynx. A biological assessment was not prepared for the project because of the potential for only negligible effects on listed threatened and endangered species and designated critical habitat. The potential effects to grizzly bears will be limited, most likely occurring during construction and causing displacement of bears if they happen to be in the local area. However, all construction will take place within previously disturbed areas within existing infrastructure/substations and will not remove grizzly bear habitat. Construction workers will be educated in the park’s food and garbage storage rules as well as proper disposal procedures. With implementation of this conservation measure, the potential for grizzly-human conflict is reduced. In addition, in accordance with the Grizzly Bear Recovery Plan, the percent of secure habitat within the Bear Management Units will not be affected. There would also be limited potential for impacts to any resident Canada lynx and their natal dens because the duration of construction would be very short (less than three months), lynx occur in very low numbers in the park, and their distribution is largely restricted to the Absaroka Range and the Central Plateau. Additionally, construction will take place in previously disturbed areas (existing substations), so no critical lynx habitat will be affected.

Affected Environment: Section 106/Cultural Resources

Comment 7 – The anticipated impacts on the proposed action on historical and cultural resources warrants integrated consultation under the National Historic Preservation Act (NHPA) Section 106. Although the draft EA appendix includes a study on visibility of the proposed project from adjacent historic districts, consultation under Section 106 of the NHPA has not been completed and integrated into the NEPA process. The draft EA states at page 101 that “the Wyoming State Historic Preservation Officer will have an opportunity to comment on the initial effects of this project. Consultation with WY SHPO on the designs of the towers and upgrades to the substations will be submitted during the public review period of this EA.” WY SHPO should have been engaged earlier in the process. Wouldn’t consultation with the WY SHPO better inform the Park Service’s analysis of impacts to historic and cultural resources in the first instance in order to determine whether the proposed action will have significant environmental impacts warranting preparation of an EIS?

Response 7 – Pursuant to Section 106 of the National Historic Preservation Act, initial consultation began with a scoping letter sent to WY and MT SHPO and the Advisory Council on Historic Preservation on May 13, 2013. The NPS is required to determine impacts to all affected resources prior to making a decision regarding the project. Consultation with various agencies many times continues past the date of the release of an environmental document to the public for review and comment. The alternatives, and the proposed action design were sent to the MT and WY SHPOs for their review. Final letters of concurrence were received from the MTSHPO on January 22, 2014 and the WYSHPO on February 21, 2014 stating that the proposed undertaking will have no effect on historic properties within Montana, and that the following historic properties: 48YE675, 48YE682, 48YE686, 48YE822, 48YE823, 48YE852, located in

Wyoming will not be affected by the undertaking as planned. The WYSHPO further concurred that historic properties 48YE486, 48YE50, and 48YE1057 will not be adversely affected by the undertaking as planned.

Alternatives: Self-Sufficient Power System for Park

Comment 8 – Geothermal seems to be a “no-brainer” for Yellowstone. Let the heat of the planet provide all the energy you could ever need with no associated pollution, permanently fixed costs, and very little encroachment on habitat or scenery. Why is geothermal not tapped?

Response 8 – *Consideration of geothermal resources for generation of electricity is out of the scope of this proposal. This project proposes to upgrade the existing power infrastructure in order for Northwestern Energy, which is the park's sole provider of electricity, to automate their electrical distribution system and provide for radio communications between NWE employees and NPS. Further, National Park Service Management Policies 2006 directs the protection of geothermal resources within a park. The specific guidelines in Section 4.8.2.3 for the protection of geothermal resources are as follows. “Superintendents will strive to maintain the integrity of thermal systems, including the movement of air and/or water through heated rock, cold water recharge, the proximity of hot and warm water to the heat source, and the hydrostatic pressure and elevated temperature. Superintendents will work to prevent unacceptable impacts on thermal resources caused by development.” Therefore, geothermal sources of energy were not considered as part of this proposal.*

Alternatives: Backup Generators

Comment 9 – If the communications grid is as antiquated as the 1950's, why not build the bulk of your generators and buildings outside Yellowstone and upgrade minimally in the park?

Response 9 – *The electric generators proposed as part of this project would be used as backup power for the Supervisory Control and Data Acquisition (SCADA) and communications systems only. Large backup generators for providing emergency power to the developed areas of the park (in cases of prolonged outages) already exist at Old Faithful, Grant, and Lake. The small generators proposed for this project would provide power to allow remote monitoring and switching of equipment as well as starting up the large generators remotely. Power generation for the electric grid that provides power to Yellowstone National Park already is located at various locations outside the park. Improvements to these areas are beyond the scope of this proposed project. The equipment buildings at each site would provide protection for the weather for equipment used for communications and SCADA systems.*

Alternatives: Location of proposed action

Comment 10 – There is no justification for new towers at Madison and Norris. At the very least, this part of the plan must be rejected. Fewer than 10% of the outages in 2012 occurred at these two places. The Wireless Plan of 2008 distinguished between the parts of the park with overnight accommodations (cellular coverage provided), and those without (no cellular coverage), and this proposal should stick to that division. Let Madison and Norris be administered with satellite phones or whatever else works. On page 2, the EA states: When the park concessioners lost power inside of Yellowstone it creates a number of issues....There are no concessionaires at Norris and Madison, as far as I know, so most of the parks concerns about the grid do not apply there. Leave them out.

Response 10 – Actions proposed in this EA do not include any new cellular coverage. The radio communication towers proposed in the preferred alternative are for automation of the SCADA system and for communications between NWE personnel within the park, as described in the EA. The Norris substation controls the west side of the park's transmission system, therefore the proposed tower at this location would be the sole automation and communication link for the system through Madison to Old Faithful. If proposed towers at Madison and Norris were not installed, the SCADA system for automation and communications between NWE personnel in the field and at the operation centers to allow for clearance procedures, system status, and safety of employees would not be improved. Therefore, the overall need of the project would not be met.

Location of Towers

Comment 11 – Could these towers be located in another more appropriate place?

Response 11– The tower locations were selected in order to be compatible with the existing electric substations within the park. These existing locations are located adjacent to, or within existing development areas of the park, or are located off service roads behind locked gates. A visual assessment, which is located in Appendix A of the EA, was completed to determine the visual effects of the proposed towers. Based on this assessment, the only substations where visibility may be impacted is at the Norris and Mammoth substation locations and very minimally at Old Faithful. Figure 9 of the EA shows the photo simulation for the Mammoth substation, including the proposed 30 foot tower and brown equipment building. The proposed tower at Mammoth was lowered to 30 feet from the original design concept of 60 feet in order to reduce the visual impacts. This was made possible by proposing to mount an antenna to an existing 100-foot tower currently located at Elk Plaza in Mammoth. At the Norris substation, the proposed tower would be briefly visible in the foreground through the trees as visitors drive the Grand Loop Road east from the Norris. This assessment also found that the proposed 16'x24' dark brown building under the preferred alternative would be minimally visible at the Norris and Mammoth substations only, since these are the only two substation areas that are visible to the public in general. At each substation, propane tanks also will be sited in such a way that the equipment building would serve as a screen from visitor view. The proposed 60-foot tower at the Old Faithful substation would only be visible in the distant background from the Grand Loop Road Historic District. The 60- and 30-foot towers at each site are the minimum tower height needed to provide coverage for the terrain in which the existing powerline infrastructure is located.

Outages and Satellite Phones

Comment 12 – The table showing the number and duration of outages is incompatible showing only 10 outages from one year. It is not clear that these outages cause anything but minor inconvenience to a small number of visitors.

Response 12 – Table 2 found on page 4 of the EA details the top ten outages of 2012 that had the longest duration. These outages lasted from 100 to 720 minutes. Most of these outages occurred on the transmission system and therefore impacted multiple developed areas of the park simultaneously. Five of these outages occurred during the highest visitation months of June, July, and August.

Comment 13 – Satellite phones would take care of communications and is the best suited alternative for Yellowstone.

Response 13 – Currently NWE does not have mobile radio communications in YNP, and is currently relying on satellite phones for communication between workers in the park and NWE

System Operation Control Center (SOCC) in Butte, Montana. The phones have proven to have very unreliable coverage within the park. Phone calls cannot be received or dialed out from within work vehicles or when personnel are in valleys or areas with dense tree cover, which is the majority of areas where the work is performed in the park. For safety reasons, NWE requires all switching and operational orders to be received over a shared radio network. This allows multiple crews to know the current system configuration and where each other is working. An example on why this is important is if a line is "de-energized" for repairs and a different crew isn't aware of this, they could close back in a breaker, energizing the circuit, causing major safety concerns. During large events, such as outages caused by fires and storms, multiple crews from Bozeman, MT respond. These crews are accustomed to radio communications for receiving operation orders. The need for mobile radio communications is in part to allow "one to many", not "one to one" conversations for the safety considerations explained above.

A Vsat system (which is a two-way satellite ground station) for SCADA automation control with SpaceNet technology was considered under Alternative D but it only minimally met the project's objectives for increasing service reliability, reducing impacts from disruption of power outages, and improving safety for park visitors employees and contractors. Using Vsat, the fixed satellite dish communicates with an orbiting satellite, which then sends the signal to a communications hub. Once the signal is processed it is sent back to the orbiting dish and then to the SOCC in Butte, Montana. Under this scenario, four communication transmission paths are used.

Northwestern Energy currently uses this technology at approximately 30 of its locations presently, including Old Faithful. Based on this experience, NorthWestern Energy has found this type of system to be unreliable; it does not allow for voice and data; and there are serious transmission latency concerns. In 2013, the Old Faithful Vsat experienced 1,097 disruptions of communication signal that lasted from fractions of a second to multiple hours. Eight-eight of these outages were longer than 5 minutes and 28 were longer than 30 minutes. The longest outage recorded was 6 hours and 40 minutes in September, 2013 concurrent with a power outage. Currently the NEW Vsat system uses 128 kBit bandwidth which does not allow enough capacity to allow voice and SCADA.

Weather can also affect Vsat system operations at times when the need is often the highest for a reliable communication system. During an electric system outage, it is critical that equipment be remotely de-energized so NWE can safely work on it. This requires a reliable communications path between the SOCC and a particular piece of equipment. NWE's experience with the Vsat at Old Faithful is that the system is not reliable. Wet heavy snow can accumulate on the satellite dish causing the signal to be lost until the snow can be cleared or it melts. WE has tested several methods to mitigate this issue without success: reflector covers, feed horn covers, heating strips and forced air heat on the reflector. High winds can also cause the dish to be displaced, losing line of sight.

SCADA applications also have a great deal of difficulty dealing with long latency, particularly if the applications are comparing status and power quality characteristics at two ends of a transmission line (isolating a section of line that is causing a wide spread outage). Latency is also an issue when attempting to download configuration files or large historical data files. Often the vendor applications will time out as they expect a more immediate response.

For mobile radio use, the mobile radio system relies on connections back to the node equipment in Bozeman, MT. A four-second delay in Voice Over Internet Protocol (VOIP) packets would render the system almost unusable and make voice communications nearly impossible.

Vsat systems are sufficient for SCADA applications in areas that do not experience extreme weather conditions. But given the weather and climate within Yellowstone National Park, there

are too many issues that negatively affect the transmission through satellite technology and thus Alternative D was not selected as the preferred alternative.

While satellite technology is not the decision for automation currently, Yellowstone National Park staff will re-evaluate the technology every 5 years to determine whether changes have occurred with this, or any other technology, that would allow automation and communication for NWE without the use of towers. When such reliable technology exists that can be deployed in Yellowstone, it would be implemented, provided there are no new impacts, and the towers added as part of this project would be removed.

Errata Sheets

Electric Transmission/Distribution System Communication and Automation Plan Yellowstone National Park

Text Changes

Page 15, Equipment Buildings – The sixth sentence states: At Mammoth a 12'x20' building is proposed. Change to: At Mammoth a 12'x14' and a 12'x7' building are proposed.

Page 17, 26, 27, 31, Tables – All tables should reflect that a 16'x24' equipment building will be constructed for the Old Faithful Substation as shown on the drawing on page 24 of the EA.

Page 25, Buffalo Mountain – Add a sentence to the end of the paragraph: The U.S. Forest Service will prepare any documents required at this site needed in accordance with the National Environmental Policy Act prior to any construction.

Page 29, Mitigation Measures – Visual Resources – Add the following bullet: Yellowstone National Park staff will re-evaluate the technology every 5 years to determine whether any technology changes have occurred that would allow automation and communication for NWE substations without the use of towers. When such reliable technology exists that can be deployed in Yellowstone, it may be implemented, provided there are no new impacts, and the towers added as part of this project may be removed.

Page 29, Alternatives Considered and Dismissed – Tower Location – Add this topic: The location of the existing (now defunct) NWE two-way radio system antennas atop Mt. Washburn were considered for a new narrowband radio system. This site was rejected as it would not address existing, and increased dead zones (due to the narrowband technology) within the Right-of-Way corridor where radio coverage is needed.

Page 29, Alternatives Considered and Dismissed – Self Sufficient Power System for the Park – Changes to the existing power system currently provided by NWE was considered but dismissed due to extensive impacts to numerous resources that would occur from placement of alternative energy infrastructure needed in order to implement a system within the park. Additionally, no funding source has been identified for such a large scale project at this time.

Page 36, Tower –Roosevelt Comprehensive Plan (2010) – Delete this paragraph, it is redundant with the 5th bullet on the page. The correct date for the plan as stated in that bullet is (2009).

Page 36, Native Fish Management Plan (2010) – Change this bullet to: Native Fish Conservation Plan/EA (2010).

Appendix – Non-Impairment Finding

National Park Service's *Management Policies, 2006* require analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within the park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relates back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include soil resources, geothermal resources, vegetation, rare plants & wetlands, wildlife, special status species, scenic resources, and cultural resources. These topics are detailed below:

Soil Resources – Soils are an integral component of terrestrial ecosystems that form over time from interactions among source material, climate, topography, and biotic organisms. Soil is derived from four main parent materials, primarily volcanic. The selected action will impact approximately 0.1 acre of soil in the immediate vicinity of the existing substations and within existing disturbed areas. After construction is complete and if needed, the area around the existing substations and base of the towers will be graded to match the pre-construction conditions and seeded with native vegetation. Overall, impacts on soil resources will be adverse, minor, short-and long-term and localized. Given the localized nature, impacts will not lead to impairment to soil resources.

Geothermal Resources – Geothermal activity occurs near the Mammoth, Old Faithful and Norris substations, though not in the immediate vicinity. Thermal areas will not be impacted by existing substations, ongoing maintenance activities or access to the sites. Excavation for proposed upgrades at the substation sites is not expected to encounter hot ground. To minimize effects to this resource park geologists will be informed in any voids, gasses, hot water or hot ground are encountered. Impacts will be adverse, negligible, short-and long-term. Because the proposed action will have adverse, negligible, short-and long-term impacts on the park's geothermal resources, there will be no impairment to geothermal resources.

Vegetation, Rare Plants & Wetlands – As described above, the project will disturb approximately 0.1 acre of ground during excavation, trenching, grading and construction to upgrade the existing substations and establish a level surface for the base of the towers. Although the substation sites occur in previously disturbed areas the presence of disturbance creates conditions conducive to establishment and spread of non-native vegetation. To minimize effects, mitigation measures such as re-vegetation and re-contouring will take place following construction. Weed control methods will be implemented to minimize the introduction of noxious weeds. Wetlands or wet areas will be avoided if possible. If not possible, protective planking will be placed over the area prior to driving across them. Areas with rare plant concerns will be flagged and avoided. Overall, impacts of Alternative B on vegetation, rare plants, and wetlands will be adverse, short-and long-term, and negligible to minor. Given adverse impacts are negligible to minor there will be no impairment to vegetation, rare plants, and wetlands.

Wildlife – Yellowstone National Park is home to a wide variety of wildlife. With the exception of Buffalo Mountain, construction will take place in developed areas. Numerous wildlife species inhabit the sites proposed for construction, with presence varying on a seasonal basis. Those that are most common in the forests and meadows adjacent to developed areas during the summer months when visitation is highest will generally be species that are tolerant of, if not habituated to, human presence and activity and will result in adverse, short-and long-term minor

impacts. Because the proposed action are expected to have short-and long-term, minor, adverse impacts, there will be no impairment to wildlife.

Special Status Species – Seventeen special status-species exist in Yellowstone National Park, fourteen animals and three plant species. Under the selected action, construction will create noise disturbance and expose potential special status species habitat to an increase in human presence. However, once construction is over, species may return and resume use of these sites. The selected action will not impact any special status plant species. The U.S. Fish and Wildlife Service concurred with the NPS determination for listed species on December 18, 2013. With the implementation of mitigation measures listed in this EA, no impairment of special status species will occur.

- Effects on the federally listed and candidate species include:
 - **Canada Lynx and Canada Lynx Habitat:** Buffalo Mountain is the only site that falls within an area defined as lynx critical habitat. However, the effects of this individual project would be negligible on Canada lynx. The only potential effects to lynx would be during construction, which could cause displacement of the animals if they were in the local area. Overall, impacts of the proposed action on Canada lynx are expected to be negligible, short-term and adverse. Actions proposed under this alternative “may affect but would not likely adversely affect” Canada lynx and “no effect” on designated critical habitat.
 - **Grizzly Bear:** Potential effects to grizzly bears from the proposed action are: (1) temporary changes in the quality of habitat and availability of food; and (2) displacement from habitat. In accordance with the revised Grizzly Bear Recovery Plan, the percent of secure habitat within the Bear Management Units will not be affected. Prior to construction, workers will be educated in the park’s food and garbage storage rules as well as proper disposal procedures. With implementation of this conservation measure the potential for a grizzly-human conflict is reduced. Actions proposed under the proposed action will have a negligible, short-term, adverse impact and “may affect but would not likely adversely affect” grizzly bears.
 - **Whitebark Pine:** No trees, including whitebark pine will be removed as part of the proposed action. Trampling of seedlings is always a possibility, but since the project sites are in previously disturbed areas, the likelihood is minimal. Under the proposed action, overall impacts to whitebark are expected to be negligible, short-and long-term, and adverse.

Scenic Resources – Implementation of the proposed action would have a negligible to minor, short-and long-term adverse impact to scenic resources. The short-term impacts would include disturbed land, construction equipment, and development activities. Long-term impacts would include the lattice towers that would be visible from some areas within developments or along roads. Because the proposed action will have no greater than minor impacts, there will be no impairment to scenic resources.

Cultural Resources –Implementation of the proposed action will not affect archeological resources. Based on photo simulations prepared for this project, a minor, long-term, indirect adverse impact is anticipated on historic structures and cultural landscapes, resulting in a “no adverse effect” under § 106 of the National Historic Preservation Act. Because the proposed action will have negligible to minor impacts resulting in “no adverse effect”, there will be no impairment cultural resources.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the preferred alternative.